Emissions Inventory Help Sheet for Vehicle Travel on Unpaved Roads

Travel on unpaved roads at a facility needs to be included in an emission inventory report. Identify which categories of the following types of equipment and speeds apply to your facility and use a separate **General Process Form** for each. On line 2 of the General Process Form, describe the type of equipment used on site and the average speed. If you do not want to use our default emission factors, please contact us for certain county parameters and be sure to submit an Emission Factor Calculation Form.

On the General Process Form:

line 4, "Process TIER Code", enter **140799**
line 5, "SCC Code", enter **30502504**

PM_{10} Emission Factors, lb/VMT at miles per hour (mph) average
VMT = "Vehicle miles traveled"

	PM_{10} Emission Factor (EF) Enter EF in column 15, and enter "lb/VMT" in column 16								
Vehicle Type	**10 mph**	**15 mph**	**20 mph**	**25 mph**	**30 mph**	**35 mph**	**40 mph**	**45 mph**	**50 mph**
Heavy-Duty Vehicles (e.g., haul trucks, cranes)	2.13	3.2	4.27	5.33	6.4	7.47	8.53	9.6	10.67
Medium-Duty Vehicles (e.g., front end loaders, forklifts)	0.57	0.86	1.14	1.43	1.71	2.0	2.28	2.57	2.85
Light-Duty Vehicles (e.g., pickup trucks)	0.29	0.44	0.59	0.74	0.88	1.03	1.18	1.33	1.47

The emissions factors above are **uncontrolled**. The calculation for travel without dust control is:

Annual miles (line 11) $\times$ emission factor (column 15) = PM_{10} emissions (column 24)

You may account for dust control efforts on haul roads if: (1) you use water or other dust suppressants, **and** (2) if you are in full compliance with the record keeping requirements in Rule 310, Fugitive Dust and/or Rule 316, Nonmetallic Mineral Mining and Processing. Show capture efficiency (in column 19) at 100%. A control efficiency (column 22) of 70% is allowed for regular watering. The range of acceptable control efficiencies for chemical palliatives (dust suppressants) is 70–90%.

The calculation including dust control is as follows:

Annual miles (line 11) $\times$ emission factor (column 15) $\times$ (1 – control efficiency) = PM_{10} (lbs., column 24)

Example: Heavy-duty trucks travelled 1800 miles at 15 mph on regularly watered haul roads on site.
1800 VMT $\times$ 3.2 lb/VMT $\times$ 0.30 = 1728 lb. PM_{10}

Reference: U.S. EPA, "Compilation of Air Pollutant Emission Factors: Volume I: Stationary Point and Area Sources" (AP-42), fifth ed. Section 13.2.2.

Emissions Inventory EXAMPLE: Unpaved Road Travel
You may use this form for reporting. Indicate vehicle size and speed.

General Process Form - 1999
Permit number(s) _____

1- Process ID _____

circle one: **light/medium/heavy**

2- Process Type/Description: **unpaved road travel,**   ^   ^   **-duty vehicles @**   **mph** _____

3- Stack ID(s) *(only if required on Stack Form)*   **NA**   _____   _____   _____   _____

4- Process TIER Code: **140799 -** fugitive dust _____

5- SCC Code   **30502504**   *(8 digit number)* _____

6- Seasonal Throughput Percent: Dec-Feb _____%   Mar-May _____%   Jun-Aug _____%   Sep-Nov _____%

7- Normal Operating Schedule: Hours/Day _____   Days/Week _____   Hours/Year _____

8- Typical Hours of Operation   *(military time)*   Start _____   End _____

9- Emissions based on *(name of material or other parameter) e.g. "rock", "diesel", "vehicle miles traveled")*   **vehicle miles traveled**

10- ☒ Used (input)   or   ☐ Produced (output)

11- Annual Amount *(a number)* _____

12- Unit of Measure *(for example: tons, gallons, 1000 cu ft, acres, units produced, etc.)*   **vehicle miles traveled**

13- Unit Conversion Factor *(if needed to convert Unit of Measure to correlate with emission factor units, see Attachment 5)* _____

	Emission Factor (EF) Information				Control Device Information					
14	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
Pollutant	Emission Factor (EF) (number)	EF Units (lbs per)	Controlled EF? Yes or No	Calculation Method Code*	Capture% Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM10		**VMT**	**No**	**6**						lb

VMT EFs are uncontrolled. With daily watering & 1.5% minimum moisture content: capture efficiency = 100% and control efficiency = 70%.

How to calculate emissions: *Multiply annual miles (line #11) × EF (lbs/VMT, column #15) x [1- column 22] = column #24, Estimated emissions.*

*Calculation Method Codes
   1 = Continuous Emissions Monitoring Measurements
   2 = Best Guess/ Engineering Judgment
   3 = Material Balance
   4 = Source Test Measurements (Stack Test)
   5 = AP-42/ FIRE Method or Emission Factor
   6 = State or Local Agency Emission Factor
   7 = Manufacturer Specifications

**Control Efficiency Reference Codes
   1 = Tested efficiency / EPA reference method
   2 = Tested efficiency / other source test method
   3 = Design value from manufacturer
   4 = Best guess / engineering estimate
   5 = Calculated, based on material balance
   6 = Estimated, based on a published value